

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A substrate assembly, comprising:
a support surface extending into a recess formed in the substrate; and
a conductive layer spaced apart from the support surface and extending into the recess;
and
a plurality of high-K dielectric layers positioned between the support surface and the
conductive layer over said support surface, wherein a common metal is present in
at least two adjacent layers of said plurality, and wherein at least two layers of
said plurality exhibit different degrees of oxidation so that at least one layer of the
plurality of high-K dielectric layers manifests greater oxidation than would an
equivalent thickness of an underlying layer of the plurality, further wherein the
support surface remains substantially free of an oxide present in the plurality of
high-K dielectric layers.
2. (Original) The substrate assembly in claim 1, wherein said plurality of high-K dielectric
layers comprises a first high-K dielectric layer contacting said support surface.
3. (Original) The substrate assembly in claim 1, further comprising a barrier layer between said
support surface and said plurality of high-K dielectric layers.
4. (Original) The substrate assembly in claim 1, wherein said support surface is a capacitor
electrode.
5. (Previously Presented) The substrate assembly in claim 1, wherein said plurality of high-K
dielectric layers defines a thickness of at most 200 angstroms.

6. (Original) The substrate assembly in claim 5, wherein said plurality of high-K dielectric layers comprises a first high-K dielectric layer contacting said support surface and defining a thickness of at least a monolayer.
7. (Previously Presented) The substrate assembly in claim 6, wherein said first high-K dielectric layer defines a thickness of at least 10 angstroms.
8. (Currently Amended) A capacitor dielectric, comprising:
 a first high-K capacitor dielectric comprising a metallic element; and
 a second high-K capacitor dielectric comprising said metallic element, having a lower oxygen density than said first high-K capacitor dielectric, and contacting said first high-K capacitor dielectric, wherein the first high-K capacitor dielectric manifests a greater oxidation than would an equivalent thickness of the second high-K capacitor dielectric, further wherein an oxide present in the first high-K dielectric layer and the second high-K dielectric layer is not diffused into a support surface that extends into a recess that supports the first high-K dielectric layer and the second high-K dielectric layer, and
 a conductive layer spaced apart from the support surface and extending into the recess, wherein the first high-K capacitor dielectric and the second high-K capacitor dielectric abut the support surface and the conductive layer.
9. (Original) The capacitor dielectric in claim 8, wherein said first high-K capacitor dielectric defines a first thickness; and wherein said second high-K capacitor dielectric defines a second thickness that is different from said first thickness.
10. (Original) The capacitor dielectric in claim 8, wherein said first high-K capacitor dielectric and said second high-K capacitor dielectric are oxides.
11. (Original) The capacitor dielectric in claim 10, wherein said first high-K capacitor dielectric is a first oxide; and wherein said second high-K capacitor dielectric is a second oxide different from said first oxide.

12. (Currently Amended) A capacitor dielectric, comprising:

a first high-K capacitor dielectric comprising a metallic element; and

a second high-K capacitor dielectric comprising said metallic element and contacting said first high-K capacitor dielectric,

wherein said first high-K capacitor dielectric and said second high-K capacitor dielectric are oxides, wherein said first high-K capacitor dielectric contains a first amount of oxygen per unit volume, and wherein said second high-K capacitor dielectric contains a second amount of oxygen per unit volume different from said first amount, further wherein the first high-K capacitor dielectric manifests a greater oxidation than would an equivalent thickness of the second high-K capacitor dielectric, and a support surface extending into a recess that supports the first high-K dielectric layer and the second high-K dielectric layer that remains substantially free of the oxides; and

a conductive layer spaced apart from the support surface and extending into the recess, wherein the first high-K capacitor dielectric and the second high-K capacitor dielectric abut the support surface and the conductive layer.

13. (Currently Amended) A capacitor structure, comprising:

a first electrode layer extending into a recess in a substrate;

a dielectric layer disposed over said first electrode layer, wherein said dielectric layer comprises a plurality of consecutively-positioned sub-layers, wherein each of said sub-layers comprises a high-dielectric-constant material, wherein said dielectric layer comprises an element common to all sub-layers of said plurality, and wherein one of said sub-layers is more oxidized than another of said sub-layers so that at least one of the sub-layers of the dielectric layer manifests greater oxidation than would an equivalent thickness of an underlying sub-layer of the dielectric layer, further wherein the first electrode layer remains substantially free of an oxide present in the sub-layers; and

a second electrode layer disposed over said dielectric layer and extending into the recess.

14.-51. (Canceled)

52. (Currently Amended) A capacitor dielectric, comprising a plurality of capacitor dielectric layers defining a total thickness ranging from 50 to 70 angstroms, wherein each layer of said plurality is a high-K dielectric defining an individual thickness ranging from 10 to 40 angstroms in thickness, wherein at least one layer of said plurality manifests greater oxidation than would an equal thickness of an underlying layer of said plurality, and wherein each layer of said plurality comprises a metal oxide included within an adjacent layer of said plurality, further wherein a supporting surface extending into a recess and ~~adjacent~~ abutting the plurality of capacitor dielectric layers remains substantially free of the metal oxide, and an electrode layer is disposed over the plurality of dielectric layers, the electrode extending into the recess.

53. (Original) The capacitor dielectric of claim 52, wherein at least a lowest layer of said plurality defines an individual thickness of about 20 angstroms.

54-59. (Cancelled)

60. (Previously Presented) The substrate assembly of claim 1, wherein the at least two layers of said plurality both include barium.

61. (Previously Presented) The substrate assembly of claim 60, wherein the at least two layers of said plurality both include strontium and titanium.

62. (Currently Amended) A capacitor dielectric, comprising a plurality of capacitor dielectric layers positioned between a supporting surface extending into a recess and an electrode layer extending into the recess, the dielectric layers defining a total thickness ranging from 50 to 70 angstroms, wherein each layer of said plurality is a high-K dielectric defining an individual thickness ranging from 10 to 40 angstroms in thickness, wherein at least one layer of said plurality manifests greater oxidation than would an equal thickness of an underlying layer of said plurality, wherein each layer of said plurality comprises a metal oxide included within an adjacent layer of said plurality, and wherein the underlying layer includes a means to minimize

oxidation beyond the plurality of capacitor dielectric layers and into a the supporting surface that extends into a the recess, further wherein the metal oxide remains substantially within the plurality of capacitor dielectric layers.

63. (Currently Amended) A capacitor dielectric, comprising a plurality of capacitor dielectric layers disposed on between a supporting surface extending into a recess and an electrode layer extending into the recess, wherein each layer of the plurality is a high-K dielectric, further wherein at least one layer of the plurality manifests a greater oxidation than would be present in an equal thickness of an underlying layer of the plurality, and wherein each layer of the plurality comprises a metal oxide included within an adjacent layer of the plurality, further wherein the metal oxide remains substantially within the plurality of capacitor dielectric layers.

64. (Previously Presented) The capacitor dielectric of claim 63, wherein the plurality of capacitor dielectric layers defines a total thickness that ranges between approximately 50 angstroms and approximately 70 angstroms.

65. (Previously Presented) The capacitor dielectric of claim 63, wherein each layer of the plurality defines an individual layer thickness that ranges between approximately 10 angstroms and approximately 40 angstroms.

66. (Previously Presented) The capacitor dielectric of claim 63, wherein at least a lowest layer of the plurality defines an individual thickness of approximately 20 angstroms.

67. (Currently Amended) A capacitor dielectric, comprising a plurality of capacitor dielectric layers abutting a supporting surface extending into a recess and an electrode layer extending into the recess, wherein each layer of the plurality is a high-K dielectric, further wherein at least one layer of the plurality manifests a greater oxidation than would an equal thickness of an underlying layer of the plurality, wherein each layer of the plurality comprises a metal oxide included within an adjacent layer of the plurality, and wherein the underlying layer includes a means to minimize oxidation beyond the plurality of capacitor dielectric layers, further wherein

the metal oxide is not diffused from the plurality of high-K dielectric layers into a the supporting surface extending into a the recess and adjacent the plurality of layers.

68. (Previously Presented) The capacitor dielectric of claim 67, wherein the plurality of capacitor dielectric layers defines a total thickness that ranges between approximately 50 angstroms and approximately 70 angstroms.

69. (Previously Presented) The capacitor dielectric of claim 67, wherein each layer of the plurality defines an individual layer thickness that ranges between approximately 10 angstroms and approximately 40 angstroms.

70. (Previously Presented) The capacitor dielectric of claim 67, wherein at least a lowest layer of the plurality defines an individual thickness of approximately 20 angstroms.